DOCUMENT RESUME

ED 183 885 CE 024 507

TITLE Design and Implementation of an Assessment Model for Students Entering Vocational Education Programs in the State of Colorado. Drafting.
INSTITUTION University of Northern Colorado, Greeley.
SPONS AGENCY Colorado State Board for Community Colleges and Occupational Education, Denver.
PUB DATE Jul 79
NOTE 41p.; For related documents see CE 023 308, CE 023 747-750, CE 023 754-756, and CE 024 505-513.
AVAILABLE FROM Vocational Teacher Education, University of Northern Colorado, Greeley, CO 80639 ($2.75)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Academic Ability; Basic Skills; Career Awareness; Cognitive Ability; *Drafting; Educational Assessment; Educational Diagnosis; Educational Testing; Guidelines; Learning; *Learning Problems; Listening Skills; Mathematics; *Needs Assessment; Postsecondary Education; Psychomotor Skills; Reading Skills; Secondary Education; Student Characteristics; *Student Needs; Tests; *Vocational Education; Vocational Interests
IDENTIFIERS Colorado

ABSTRACT

This basic vocational related skills assessment module in drafting is one of sixteen modules designed to help teachers assess and identify some of the areas in which special needs students may encounter learning difficulties. The materials in the module allow for informal assessment in three basic areas: academic skills, motor skills, and vocational interest and awareness. The basic skills assessment includes reading skills, listening skills, using a book to locate information, and mathematics. The reading section offers materials written at two different reading levels: the first paragraph is easy (4-8), while the second paragraph is more difficult (9-12). The motor skills are assessed through teacher observation and recording on a matrices skills checklist. The third area, vocational interest and awareness, is assessed through a vocational awareness questionnaire completed by students. (LRA)

**********
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
**********

ED183885

# DESIGN AND IMPLEMENTATION OF AN ASSESSMENT MODEL FOR STUDENTS ENTERING VOCATIONAL EDUCATION PROGRAMS IN THE STATE OF COLORADO DRAFTING

*University of Northern Colorado*

*July - 1979*

*Project funded by:*

*State Board for Community Colleges and Occupational Education*

Project Staff:

Project Director - Nancy Hartley
Project Coordinator - Karen Otazo
Graduate Assistant - Connie Cline

CE 024 507

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Nancy K. Hartley

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

# DESIGN AND IMPLEMENTATION OF AN ASSESSMENT MODEL FOR STUDENTS ENTERING VOCATIONAL EDUCATION PROGRAMS IN THE STATE OF COLORADO

*Each learner should be considered as unique. All students have unique characteristics which are considered by alert teachers in their efforts to foster more effective learning. This is especially true in vocational programs where our opportunities to know each learner are greater than in some other classroom situations.*

*Douglas Towne*
*Sydney Wallace*

The purpose of this project was to develop materials that could be utilized for informal assessment of students in vocational programs. The materials were then developed into a series of sixteen modules representing the seven service areas of vocational education. These modules will enable teachers to assess and identify some of the areas in which special needs students may encounter learning difficulties.

This project and the resulting modules are based on the assumption that one of the ways that vocational education can provide training "appropriate to the needs and progress of each ... individual," is to assess the needs of each individual. Another assumption is that "modifying" a vocational program may be done in many ways but cannot be done effectively until assessment of student needs has been completed. The modules will provide information that will enable vocational teachers to modify their materials or lessons based on the results of the assessment information.

Information which you obtain from the assessment may be used in the following ways:

*grouping of students with similar instructional needs*
*placement of students in programs*
*modification of instructional materials*
*writing goals and objectives for the student*
*obtaining remedial help*
*as a model to devise your own materials*
*writing contracts for behavioral change*
*giving specific information to supplemental services or support staff for assisstance*

Identification of learning problems clarifies the various level of abilities and the learning styles of students. This necessitates individualizing vocational programs and instruction.

The modules include basic academic skill assessment, motor skill assessment, and interest assessment.

The following vocational areas are included in the modules:

| | |
|---|---|
| *1) Welding* | *9) Health Occupations* |
| *2) Sheet Metal* | *10) World of Work* |
| *3) Agriculture* | *11) Food Preparation* |
| *4) Graphic Arts* | *12) Child Care* |
| *5) Woodworking* | *13) Distributive Education* |
| *6) Automotive* | *14) Electricity* |
| *7) Autobody* | *15) Horticulture* |
| *8) Drafting* | *16) Business and Office Occupations* |

The assessment of student abilities are important for success in the vocational classroom. The basic skills assessment includes Reading Skills, Listening Skills, Using a book to locate information, and Mathematics. The mathematics section covers many of the basic operations and applications of math that is needed in vocational classes.

The reading section offers paragraphs written at two different reading levels; the first paragraph being easy (4-8), the second paragraph more difficult (9-12). Those students who have trouble with both paragraphs will find it difficult to learn through reading.

As a result of the field testing comments, there are two areas which are only included in the module entitled, World of Work. These two areas are "Following Directions" and "Safety Warnings Quiz". They were judged too "easy" for inclusion in all modules. This module was written specifically for students in disadvantaged and handicapped programs.

Materials are color coded for ease of usage and efficiency.

| | | |
|---|---|---|
| *Yellow* | - | *Student Sheets* |
| *White* | - | *Vocational Awareness Questionnaire* |
| *Salmon* | - | *Matrices* |
| *Green* | - | *Teacher Materials* |
| *Gold* | - | *Class Scoring Sheets* |

DAILY LIVING COMPETENCIES

PERSONAL CHARACTERISTICS

WORK APTITUDES

MOTOR SKILLS

## MATRICES
## SKILLS CHECK LISTS

DIRECTIONS TO THE TEACHER:

* This section is designed to assess capabilities that are not easily quantifiable. Therefore, you will use these as observation instruments.
* More than anything else, these are to be used as diagnostic tools to help establish goals and objectives.
* Using the matrices, observe the student over a period of several weeks in several different situations.
* There are many reasons for poor or below average levels of performance. These may include environmental influences and health, i.e., stress, nutrition, physical limitations. The matrices are merely a guide to reflect how well a student is doing in your area.

DIRECTIONS: Please check the level each student is at according to the following scale.

1. poor
2. below average
3. average
4. good
5. very good
6. n/a

| STUDENT | MATRIX SKILLS CHECK LIST | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DAILY LIVING COMPETENCIES: | | | | | | | | | | | | | |
| Can give personal information | | | | | | | | | | | | | |
| Money concepts | | | | | | | | | | | | | |
| Transportation abilities | | | | | | | | | | | | | |
| Job seeking skills | | | | | | | | | | | | | |
| Completes work | | | | | | | | | | | | | |
| Understands directional terms | | | | | | | | | | | | | |
| Understands safety rules | | | | | | | | | | | | | |
| Demonstrates cooperation with others | | | | | | | | | | | | | |
| Punctuality | | | | | | | | | | | | | |
| Attendance | | | | | | | | | | | | | |

DIRECTIONS: Please check the level each student is at according to the following scale.

1. poor
2. below average
3. average
4. good
5. very good
6. n/a

| STUDENT | MATRIX SKILLS CHECK LIST | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PERSONAL CHARACTERISTICS: | | | | | | | | | | | | | | | |
| Grooming | | | | | | | | | | | | | | | |
| Personal Hygiene | | | | | | | | | | | | | | | |
| Physical Tolerance Full Workday | | | | | | | | | | | | | | | |
| Peer Relationships | | | | | | | | | | | | | | | |
| Self Confident | | | | | | | | | | | | | | | |
| Works Well Alone | | | | | | | | | | | | | | | |
| Works Well in Group | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |

DIRECTIONS: Please check the level each student is at according to the following scale.

1. poor
2. below average
3. average
4. good
5. very good
6. n/a

| STUDENT | MATRIX SKILLS CHECK LIST | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WORK APTITUDES: | | | | | | | | | | | | | |
| Follows Written Instructions | | | | | | | | | | | | | |
| Follows Verbal Instructions | | | | | | | | | | | | | |
| Follows Demonstration | | | | | | | | | | | | | |
| Retains Instructions | | | | | | | | | | | | | |
| Improves with Repetition | | | | | | | | | | | | | |
| Conceptualizes the Problem | | | | | | | | | | | | | |
| Follows Multi-stepped Instructions | | | | | | | | | | | | | |
| Uses good judgement | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

DIRECTIONS: Please check the level each student is at according to the following scale.

1. poor
2. below average
3. average
4. good
5. very good
6. n/a

| STUDENT | MATRIX SKILLS CHECK LIST | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MOTOR SKILLS: | | | | | | | | | | | | | | |
| Perform Manipulative Tasks | | | | | | | | | | | | | | |
| Move Around Objects | | | | | | | | | | | | | | |
| Use Large Tools | | | | | | | | | | | | | | |
| Small Motor-eye-hand Coordination | | | | | | | | | | | | | | |
| Two Hand Coordination | | | | | | | | | | | | | | |
| Use Small Tools | | | | | | | | | | | | | | |
| Finger Dexterity | | | | | | | | | | | | | | |
| Steady Work Pace | | | | | | | | | | | | | | |
| Heavy Lifting | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

## READING SKILLS

DIRECTIONS TO THE TEACHER:

This instrument is designed to assess how well the student understands written materials. The skills are broken into vocabulary, (Question 1-5), main ideas, (Question 6), details or facts, (Question 7), and inference or logical deduction, (Question 8).

1. Have students read each paragraph and then answer the questions on the following page. The students may refer to the original paragraph while completing the questions. (Time: approximately 15 minutes).
2. Collect all sheets.
3. Correct worksheets.

Vocabulary

a. For each vocabulary word listed (Questions 1-5), the student should leave a definition or synonym that shows an understanding of the word as it is used in the sentence. Score vocabulary questions as one (1) point each. Five (5) is a perfect score; zero (0) means none are correct.

Main Idea

b. In Question Six (6) you will assign a score of 1-5. The score should be based on how completely the student comprehends the paragraph.
   1) little knowledge or comprehension
   2) some grasp of paragraph
   3) fair idea of paragraph's content
   4) good idea of paragraph
   5) description which tells what the whole paragraph is about

Details

c. In Question Seven (7) a full score, five (5) points, should be based on whether the student puts down the two important facts.
   1) any one fact in the paragraph
   2) any two facts in the paragraph
   3) one fact that answers the statement well
   4) one fact that answers the statement well and any one that is in the paragraph
   5) Two facts that answer the statement well

Inference

d. In Question Eight (8) you are looking for an understanding that goes beyond what is in the paragraph.

1) any attempt to answer

2) any answer that even addresses the question

3) some idea of an extension of the basic knowledge

4) 5) a good answer which shows an understanding of the implications of the question.

EXAMPLE: A few words which describe what a good title for the paragraph is about would receive a score of four (4).

4. Total the scores (1-8), for each paragraph.

EXAMPLE:

| | Paragraph 1 | | Paragraph 2 | | TOTAL |
|---|---|---|---|---|---|
| Vocabulary | _____ | + | _____ | = | _____ |
| Main Idea | _____ | + | _____ | = | _____ |
| Details | _____ | + | _____ | = | _____ |
| Inference | _____ | + | _____ | = | _____ |

5. Enter the score from each area and the total on the class scoring sheet.

6. Paragraph one was chosen for student who have lower reading levels. Paragraph two was chosen for students who read at the high school level.

## DRAFTING
## READING SKILLS - I

READ THIS PARAGRAPH:

Lettering is really a kind of FREEHAND drawing for forming the letters of the alphabet and numbers. Good lettering requires only patience and practice. You can learn to letter if you can make these four lines well: VERTICAL, HORIZONTAL, SLANT, and CURVED. This is because all letters are made up of these four lines in some combination. For example, and L is made with a single vertical line and a single horizontal line. The letter U is made with two vertical lines and a short curved line.

ANSWER QUESTIONS ON THE NEXT PAGE

---

John L. Feirer, Basic Drafting, Charles A. Bennett Company, Inc., Peoria, Illinois, 1978.

NAME _____

DRAFTING
READING SKILLS - I

DIRECTIONS TO STUDENT:

Please tell what the following words mean as they are used in the previous paragraph. You may draw your answer.

1. FREEHAND _____

2. VERTICAL _____

3. HORIZONTAL _____

4. SLANT _____

5. CURVED _____

VOCABULARY _____ (0-5)

6. What is this paragraph about? _____

MAIN IDEA _____ (1-5)

7. What is important for good lettering? _____

DETAILS _____ (1-5)

8. Why is lettering important? _____

INFERENCE _____ (1-5)

TOTAL SCORE _____

## DRAFTING
## READING SKILLS - II

READ THIS PARAGRAPH:

The T-square is composed of a long strip, called the blade, fastened RIGIDLY at right angles to a shorter piece called the head. The upper edge of the blade and the inner edge of the head are working edges and must be straight. The WORKING edge of the head must not be CONVEX or the T-square will rock when the head is placed against the board. The blade should have TRANSPARENT plastic edges and should be free of NICKS along the working edge.

ANSWER QUESTIONS ON THE NEXT PAGE

---

Giesecke, Technical Drawing, Macmillan Publishing Company, Inc., 1974.

NAME _____

DRAFTING
READING SKILLS - II

DIRECTIONS TO STUDENT:

Please tell what the following words mean as they are used in the previous paragraph.

1. RIGIDLY _____

2. WORKING _____

3. CONVEX _____

4. TRANSPARENT _____

5. NICKS _____

VOCABULARY _____ (0-5)

6. What is this paragraph about? _____

MAIN IDEA _____ (1-5)

7. Name two parts of the T-square:

(1) _____

(2) _____

DETAILS _____ (1-5)

8. Why should the blade be free of nicks? _____

INFERENCE _____ (1-5)

TOTAL SCORE _____

## LISTENING SKILLS

DIRECTIONS TO THE TEACHER:

This test is designed to indicate how well your students use their auditory skills. They will be listening to a passage that is read two times. Then they will fill in the missing words on the answer sheet.

In order to utilize the Listening Skills Unit, the listening skills paragraph needs to be taped or read to the students by you.

Please read the directions on the student sheets to the class. The students may write on their answer sheets at any time during the two readings. The students should be asked to read the test sheet before listening to the tape.

GRADING:

The number correct is the total number of correct words filled in the blanks. Please accept reasonable substitutes for the words. Overlook poor spelling.

## DRAFTING
## LISTENING SKILLS

The T-square is composed of a long strip, called the blade, fastened rigidly at right angles to a shorter piece called the head. The upper edge of the blade and the inner edge of the head are working edges and must be straight. The working edge of the head must not be convex or the T-square will rock when the head is placed against the board. The blade should have transparent plastic edges and should be free of nicks along the working edge.

PARAGRAPH TO BE READ OR TAPED

DRAFTING
LISTENING SKILLS

ANSWERS

What the T-Square is Like:

1. The T-square is made of a long strip, called the blade.
2. This is fastened right angles to a shorter piece called the head.
3. The upper edge of the blade and the inner edge of the head are working edges.
4. They must be kept straight.
5. The working edge of the head must not be convex or the T-square will rock when the head is placed against the board.
6. The blade should have transparent plastic edges and should be free of nicks along the working edge.

## LISTENING SKILLS

DIRECTIONS TO STUDENT:

You will hear a passage read from the book just mentioned. The passage will be read once quickly and then again slowly.
Listen carefully to the passage each time it is read. As you listen to the passage being read fill in the blanks. You will fill in the facts that you hear on your answer sheet.

READ YOUR SHEET THROUGH BEFORE LISTENING TO THE TAPE.

NAME_____

DRAFTING
LISTENING SKILLS - Student Worksheet

What the T-Square is Like:

1. The T-square is made of a long strip, called the _____.
2. This is fastened _____angles to a shorter piece called the _____.
3. The upper edge of the blade and the _____edge of the head are_____ edges.
4. They must be kept _____.
5. The working edge of the head must not be _____or the T-square will _____ when the head is placed against the board.
6. The blade should have _____ plastic edges and should be free of _____ along the working edge.

## PARTS OF A BOOK

DIRECTIONS TO THE TEACHER:

Being able to locate information in a book is an important skill in most vocational areas. This test is designed to indicate the student's information locating ability in using a TABLE OF CONTENTS and an INDEX.

The student will use a table of contents and an index from your vocational area to answer five questions for each of the two areas. CAUTION students that the Table of Contents and/or Index may have more than one page. Ask students to check all pages before writing down their answers.

SCORING:

Correct the two parts and enter the total score on the class-scoring sheet.

Example:

Score - Table of Contents . . . . . _____

Score - Index . . . . . + _____

(0-10) _____

## DRAFTING
## PARTS OF A BOOK

ANSWERS:

Table of Contents

1. Page(s) 58 or 30 (accept either or both)
2. Page(s) 22
3. Page(s) 55
4. Page(s) 58 or 62 (accept either or both)
5. Page(s) 20

Index

1. Page(s) 38,39,41
2. Page(s) 150-151
3. Page(s) 71-73
4. Page(s) 20
5. Page(s) 39-41

## PARTS OF A BOOK

DIRECTIONS TO THE STUDENT:

There will be two parts to this section.

| |
|---|
| Using a Table of Contents |
| Using an Index |

*Answer the Table of Contents questions by using the Table of Contents that follows.

*Answer the Index questions by using the Index that follows.

NAME_____

## DRAFTING
## PARTS OF A BOOK

TABLE OF CONTENTS:

Using the table of contents answer the following questions.

On which page(s) would you look for:

| | |
|---|---|
| 1. Drawing a straight line? | 1. Page(s)_____ |
| 2. Reading a rule? | 2. Page(s)_____ |
| 3. Making a shop sketch? | 3. Page(s)_____ |
| 4. Sketching freehand? | 4. Page(s)_____ |
| 5. Kinds of drawings? | 5. Page(s)_____ |

# DRAFTING

Table of Contents:

Preface . . . . . 5

Knowledgments . . . . . 6

Unit 1. WHY STUDY DRAFTING? . . . . . 9
Where Will You Use Drawing?, 12; Career in Drawing, 12.

Unit 2. DRAWING--A WAY TO COMMUNICATE . . . . . 17
What's in a Drawing?, 18; What Are the Kinds of Drawings?, 20.

Unit 3. READING A RULE AND MAKING MEASUREMENTS . . . . . 22
How People Learned to Measure,33; The Metric System, 22; Reading a Rule, 24; Tools and Materials, 28; Drawing a Straight Line, 30; Measuring, 30.

Unit 4. DRAWING VERTICAL AND HORIZONTAL LINES . . . . . 32
Common Tools and Materials, 32; Getting Started on a Simple Drawing, 35.

Unit 5. DRAWING INCLINED (SLANTED) LINES AND ANGLES . . . . . 36
Triangles, 36; Kinds of Angles, 37; Drawing Angles, 37; Drawing Parallel Lines, 38; Drawing Perpendicular Lines, 39; Protractor, 39.

Unit 6. DRAWING CIRCLES, ARCS, AND IRREGULAR CURVES . . . . . 42
Kinds of Compasses, 42; Locating the Center of Circles, 42; Adjusting the Compass, 43; Drawing Circles, 43; Drawing Arcs, 43; Drawing Irregular Curves, 44.

Unit 7. DRAWING TO SCALE . . . . . .45
Making a Scale Drawing, 45; Other Scale Drawings, 47; Points to Remember, 47.

Unit 8. DRAWING INSTRUMENTS & EQUIPMENT . . . . . 48
Drawing Sets, 48; Compasses, 48; Architect's Scale, 50; Mechanical Engineer's Scale, 51; Civil Engineer's Scale, 51; Metric Scales,52; Drafter's Pencil Sharpener and Pointer, 53; Templates, 54; Drafting Machine, 54.

Unit 9. MAKING A SHOP SKETCH . . . . . .55
Making a Shop Sketch, 55; Making an Isometric Shop Drawing, 56.

Unit 10. DOING FREEHAND SKETCHING . . . . . 58
Types of Lines, 58; Drawing Straight Lines, 58; Sketching Squares and Rectangles, 59; Sketching Triangles, 61; Sketching Circles and Arcs, 61; Making a Freehand Sketch, 62; Making Cabinet and Isometric Sketches, 63.

Unit 11. MAKING A PERSPECTIVE SKETCH . . . . . .67
A Simple Perspective Method, 67; Using Perspective Grid Papers or Templates, 68; Shading Perspective Sketches, 69; Types of Technical Illustrations, 70.

Unit 12. LEARNING TO LETTER . . . . . 71
Kinds of Lettering, 71; Lettering Practice, 73; Lettering Devices, 77.

Unit 13. DIMENSIONING A DRAWING . . . . . 78
General Rules for Dimensioning, 78; Where and How to Dimension, 79; Drawing Arrowheads, 80; Dimensioning Circles, Arcs, and Angles, 82; Adding Notes to Drawings, 82; Dual Dimensioning, 83.

Unit 14. COMPLETING A ONE-VIEW (LAYOUT) DRAWING . . . . . 86

15. MAKING A WORKING DRAWING . . . . . 89
Understanding Working Drawings, 89; Things to Remember About Working Drawings, 93; Making a Three-View Drawing, 94.

---

John L. Feirer, Basic Drafting, Charles A. Bennett Company, Inc., 1978.

NAME_____

## DRAFTING
## PARTS OF A BOOK

INDEX:

Using the index answer the following questions.

On which page(s) would you find:

| | |
|---|---|
| 1. Parallel lines? | 1. Page(s)_____ |
| 2. Weather maps? | 2. Page(s)_____ |
| 3. Kinds of lettering? | 3. Page(s)_____ |
| 4. Multi-view drawing? | 4. Page(s)_____ |
| 5. Protractor? | 5. Page(s)_____ |

INDEX

Invisible lines, 96, 97
Irregular curves, 42, 44, 45
Isometric drawing(s)
  angles in, 108
  definition of, 20, 21, 104
  dimensioning, 108
  exploded isometric, 106, 107
  making, 104-108
  shop drawing, 56, 57
  sketching, 63, 66

Lettering
  devices, 77
  kinds of, 71-73
  left-handed, 75
  numbers, 76
  practice, 73
  words and phrases, 75
Lines
  in drawing, 18
  for freehand sketching, 58, 59
  horizontal, 18, 19, 32-36
  inclined, and angles, 36, 41
  measuring accurately, 30, 31
  non-isometric, 105
  parallel, 38, 39, 41
  perpendicular, 39
  slanted or inclined, 18, 19
  vertical, 32-36

Maps
  airline, 147, 148
  highway or road, 146-148
  plat, 150
  railroad, 147
  scenic or picture, 147, 149
  topographic, 150, 152
  weather, 150, 151
Measurements, making, 22, 30, 31
Mechanical engineer's scale, 51
Metric scales (table), 53
Metric scales for metric drawing, 52, 53
Metric system, 22-24
Microfilming, 160
Mimeograph duplicating process, 160
Multiview drawing, 20

Oblique drawings, 109-111
One-view drawings, 86-89
Orthographic projection (working drawing), 20
Ozalid process (dry diazo), 158, 159

Paper, for drawing, 34
Parallel lines, drawing, 38, 39, 41
Parallel perspective drawings, 101
Pencil(s)
  for drawing, 28-30
  pointer and sharpener, 53
Perpendicular lines, drawing, 39
Perspective drawing(s)
  angular, 100-104
  definition of, 20
  kinds of, 100, 101
  parallel, 100, 101
  sketching, 67-70
Pictorial drawings, 20
Pie graph, 155
Plat maps, 150
Presentation drawing (pictorial rendering), 134, 138
Protractor, 39-41

Railroad maps, 147
Rule, reading, 24, 27, 28

SOURCE: Feirer, John L., Basic Drafting, Chas. A. Bennett Co., Inc., 1978.

## MATHEMATICS TEST

DIRECTIONS TO THE TEACHER:

This test is designed to assess skill areas that might be needed in a vocational class.

The skills cross vocational areas.

The first ten questions comprise a basic skills assessment. The rest of the test uses various kinds of skills in diverse mathematical areas.

A student should not spend too much time on any one problem. He/she should be given extra time if necessary.

1. Allow one hour for students to complete this test.
2. Score the answers on the students' test.
3. Subtract the number missed from forty-two (42).
4. Enter the score on the class scoring sheet.

It is easy to tell which areas a student is weak in by referring to the test itself.

This is important when there are only a few wrong.

DESIGN AND IMPLEMENTATION OF AN ASSESSMENT MODEL
FOR STUDENTS ENTERING VOCATIONAL EDUCATION PROGRAMS IN
THE STATE OF COLORADO

ERRATA SHEET
Mathematics Test

5.d) .48 meters or 48 centimeters

10.d) 7 or 7.0

13. 9.10 9.910 091.0 0910

14. 7860

15. $2234.85

16. 3½ hours

MATHEMATICS

Answer Key

1a. 13

1b. 1373

2a. 6

2b. 1622

3a. 4/5

3b. 10 7/8

4a. 4/7

4b. 1 6/8, 1 3/4

5a. 17.67

5b. 3 ft. 5 in.

5c. 2.87

5d. 75 centimeters

6a. 36

6b. 131274

7a. 5

7b. 107

8a. 17 ½

8b. 63/16

9a. 25

9b. 61/15

10a. .0030

10b. 3.774

10c. 8.1

10d. .7

11. 0.41

12. 5280 square feet

13. 0.910, 09.10, 091.0, 0910

14. $180

15. $342.45

16. 2 feet 3 inches

17. $48.80

18a. 3/4

18b. 4 1/8

18c. 5 ¼

19d. 1 1/8

19e. 7/8

19f. 1 3/4

20. ½ cup

21. 4 cups

22. 7:00

23. 7 hours

24. $2.50

25. 160 meters

26. 2 hours

## MATHEMATICS

DIRECTIONS TO THE STUDENT:

*TRY EACH QUESTION.

*DO NOT SPEND A LONG TIME ON ANY ONE QUESTION.

*USE THIS SHEET TO WORK OUT ANSWERS.

*ASK FOR AN EXTRA SHEET OF PAPER IF YOU NEED IT.

* DO NOT WORRY IF SOME QUESTIONS ARE TOO HARD FOR YOU.

NAME_____

## MATHEMATICS TESTING SECTION

DIRECTIONS TO STUDENT:

Solve each problem and put answer in the space provided. Don't spend a lot of time on any one problem.

| | | | ANSWERS |
|---|---|---|---|
| 1a. $\begin{array}{r} 6 \\ +7 \\ \hline \end{array}$ | b. $\begin{array}{r} 782 \\ +591 \\ \hline \end{array}$ | | 1a. _____ 1b. _____ |
| 2a. $\begin{array}{r} 18 \\ -12 \\ \hline \end{array}$ | b. $\begin{array}{r} 4001 \\ -2379 \\ \hline \end{array}$ | | 2a. _____ 2b. _____ |
| 3a. $\begin{array}{r} 1/5 \\ +3/5 \\ \hline \end{array}$ | b. $\begin{array}{r} 7\ \frac{1}{2} \\ +3\ 3/8 \\ \hline \end{array}$ | | 3a. _____ 3b. _____ |
| 4a. $\begin{array}{r} 5/7 \\ -1/7 \\ \hline \end{array}$ | b. $\begin{array}{r} 3\ 5/8 \\ -1\ 7/8 \\ \hline \end{array}$ | | 4a. _____ 4b. _____ |
| 5a. Add: 14.6 to 3.07 | b. Add: $\begin{array}{r} 1\text{ft.}8\text{in.} \\ 1\text{ft.}9\text{in.} \\ \hline \end{array}$ | | 5a. _____ 5b. _____ |

NAME _____

Mathematics Testing Section

ANSWERS

5c. Subtract: 15.63 from 18.5

d. Subtract:
3 meters 3.0 CM
-2 meters 55 CM

5c. _____

5d. _____

---

6a. 12
x 3

b. 429
x306

6a. _____

6b. _____

---

7a. 5⟌25

b. 26⟌2782

7a. _____

7b. _____

---

8a. 7 x 2 ½

b. 1 3/4 x 2 ¼

8a. _____

8b. _____

---

9a. 6 ¼ ÷ ¼

b. 7 5/8 ÷ 1 7/8

9a. _____

9b. _____

---

10a. .06
x.05

b. 10.2
x .37

10a. _____

10b. _____

10c. _____

10d. _____

c. 8⟌64.8

d. 2.50⟌17.5

NAME_____

Mathematics Testing Section

11. Write forty-one hundredths as a decimal.

ANSWER_____

12. What is the bottom floor area of a house which has the following dimensions: 96 ft. long, 55 ft. wide?

ANSWER_____

13. Arrange the following numbers from the smallest to the largest.

    0910.  9.910  091.0  09.10

ANSWER_____

14. As an apprentice you are paid $3.93 an hour. For a 50 week year you work 40 hours each week. What is your yearly income?

ANSWER_____

15. Four (4) apprentice machinists worked 7½ hours each day for $3.93 an hour. Five master electricians worked 6 3/4 hours each day at $9.75 an hour. How much must the contractor pay in total wages for the week?

ANSWER_____

16. Three pieces of pipe, 2 feet 7 inches long are cut from a 10 foot length. How much is left?

ANSWER_____

NAME_____

Mathematics Testing Section

17. In 5 workdays, a welder earns $50, $55, $42, $65, and $32. What is the average earning per day.

ANSWER_____

18. Reading one-eighth rule below, use the drawing below and give the reading of the indicated points.

a. Reading at point C _____

b. Reading at point K _____

c. Reading at point M _____

19 Find the distance between the following letters. (BE SURE TO GIVE ANSWERS IN LOWEST TERMS). Show your work.

d. A to D _____

e. J to L _____

f. I to M _____

20. ¼ cup + ¼ cup = _____

ANSWER_____

NAME_____

Mathematics Testing Section

21. How many cups in a quart?

ANSWER_____

22. If John starts baking a cake at 5:00 and the cake takes one hour to bake, at what time will it be finished?

ANSWER_____

23. If Mary and Jane start a project at 9:00 a.m. and need to finish it before 12:30 p.m. what is the total amount of time they have to do it?

ANSWER_____

24. Sue completes an oil change and will also do a lube job on the car. The oil change should take 15 minutes and the lube will also take 15 minutes. If Sue makes $5.00 an hour, how much will she make for these two jobs?

ANSWER_____

25. A field is 30 meters wide and 50 meters long. How many meters of fence will it take to go around the outside of the field?

ANSWER_____

26. You work 40 hours a week. You spend 5% of the time doing clean-up work. How much time is this per week?

ANSWER_____

NAME_____

## VOCATIONAL AWARENESS QUESTIONNAIRE

1. Name 2 jobs that you think you could do right now, without any training:
   1._____
   2._____

2. Name 2 jobs that you would like to do, if you had the training:
   1._____
   2._____

3. How much money do you think you will make on your first job?
   _____per hour _____per week

4. What job would you like to have 5 years from now?
   _____

5. Would you like to work:
   Inside_____
   Outside_____

6. Would you like to work:
   With other people_____
   By yourself_____

7. Would you do non-clean work?
   Yes, I would_____
   No, I won't_____

8. Have you ever worked and received a paycheck? Yes_____ No_____

9. What kind of work did you do? _____

10. What kind of work does your parent or guardian do?
    Father_____ Mother_____
    Guardian_____

11. Do you have a driver's license? Yes_____ No_____

12. Name any hobbies or interests you have. _____
    _____

13. Which kind of work would you like better? (CHECK ONE (1)).
    _____One with new things to learn each week.
    _____One where you could learn only one or two things well.

_____



Adapted from: St. Louis Special School District

## CLASS SCORING SHEET

DIRECTIONS TO THE TEACHER:

1. Enter all scores on to the class scoring sheet for each student in your class.

2. Circle or highlight all scores below 50% of total in each section.

3. You can use the results to:

   a. Locate areas of weakness that may need to be taught in the classroom.

   b. Group students for extra help.

   c. Refer students for help or support services.

   d. Prepare lessons and tests.

   e. Set individual and class goals.

   f. Place students in vocational programs.

## CLASS SCORING SHEET

| STUDENT / Skill Area | Vocabulary | Main Idea | Details | Inference | Reading Skills Total Score | | Listening Skills | | Parts of Book | | Following Directions (World of Work ONLY) | | Safety Words Quiz (World of Work ONLY) | | Mathematics |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |